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EXAMINER

STULTZ, JESSICA T

ART UNIT PAPER NUMBER

2873

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/815,884	Applicant(s) YEH ET AL.	
	Examiner Jessica T. Stultz	Art Unit 2873	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 June 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) 11-16 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-10 and 17-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 31 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 0706.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

Newly submitted claims 11-16 are directed to an invention that is independent or distinct from the invention originally claimed for the following reasons.

Restriction to one of the following inventions is required under 35 U.S.C. 121:

- I. Claims 1-10 and 17-20, claims 1-10 are drawn to a color-changeable pixel, classified in class 359, subclass 290. Claims 17-20 are being grouped together with the pixel claims since these claims are drawn to method of making a color-changeable pixel and could be searched together with claims 1-10 without any undue burden on the examiner.
- II. Claims 11-16, drawn to a display device comprising a plurality of color-changeable pixels, classified in class 359, subclass 291.

The inventions are distinct, each from the other because of the following reasons:

Inventions II and I are related as combination and subcombination. Inventions in this relationship are distinct if it can be shown that (1) the combination as claimed does not require the particulars of the subcombination as claimed for patentability, and (2) that the subcombination has utility by itself or in other combinations (MPEP § 806.05(c)). In the instant case, the combination as claimed does not require the particulars of the subcombination as claimed because the display device does not require that the pixels comprises first and second electrodes substantially parallel to each other, wherein the second electrode is movable relative to the first electrode in response to voltage differences applied to the first electrode and second electrode. The subcombination has separate utility such as being used in a display wherein each

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of the color-changeable pixels do not each comprise different sets of mechanical characteristics that influence movement of the movable electrode in each pixel differently.

Because these inventions are independent or distinct for the reasons given above and have acquired a separate status in the art in view of their different classification, restriction for examination purposes as indicated is proper.

Because these inventions are independent or distinct for the reasons given above and the inventions require a different field of search (see MPEP § 808.02), restriction for examination purposes as indicated is proper.

Since applicant has received an action on the merits for the originally presented invention, this invention has been constructively elected by original presentation for prosecution on the merits. Accordingly, claims 11-16 are withdrawn from consideration as being directed to a non-elected invention. See 37 CFR 1.142(b) and MPEP § 821.03.

Priority

Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Claim Objections

Claim 17 is objected to because of the following informalities: claim 17, line 5, “electrode movable” should be “electrode is movable”. Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1 and 17 and 19 (and therefore dependent claims 2-10, 18, and 20) are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Specifically, regarding independent claim 1, the phrase “in response to a voltage difference applied to the first electrode and the second electrode” is not supported by the specification or the drawings since the applicant does not disclose a voltage being applied to one or both of the electrodes to cause a voltage difference between the electrodes. For purposes of examination the claim has been examined including this limitation even though the examiner did not find support in the specification for this limitation.

Specifically, regarding claim 17, the phrases “in response to voltage differences applied to the first electrode and the second electrode” and “in response to the voltage differences” are not supported by the specification or the drawings since the applicant does not disclose a voltage being applied to one or both of the electrodes to cause a voltage difference between the electrodes. For purposes of examination the claim has been examined including this limitation even though the examiner did not find support in the specification for this amendment.

Specifically, regarding claim 19, the phrase “of the voltage differences” is not supported by the specification or the drawings since the applicant does not disclose a voltage being applied to one or both of the electrodes to cause a voltage difference between the electrodes. For purposes of examination the claim has been examined including this limitation even though the examiner did not find support in the specification for this amendment.

Claims 2-10, 18, and 20 are rejected since they inherit the failure to comply with the written description requirement from the claims from which they depend.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-6, 8-10, and 17-20 are rejected under 35 U.S.C. 102(b) as being anticipated by Yamada US 2002/0027636, herein referred to as Yamada '636.

Regarding claim 1, Yamada '636 discloses a color-changeable pixel (Abstract and Section 100, wherein the LCD comprises pixels and a color display) comprising: a first electrode (Sections 97, 302-307, wherein the first electrode is "E2" on substrate "S2", Figures 2A-2B and 3), a second electrode substantially parallel to the first electrode (Sections 97, 302-307, wherein the second electrode is "E1" on substrate "S1" and is parallel to first electrode "E2", Figures 2A-2B and 3), wherein the second electrode is movable relative to the first electrode in response to a voltage difference applied to the first electrode and the second electrode (Sections 5, 97, 136-149, 302-307, wherein the LCD deforms in response to an applied force, i.e. a voltage, as shown in Figures 2A-2B, Figure 3); and a plurality of supports, located between the first electrode and the second electrode (Sections 136-139 and 310, wherein the supports are spacers "3" and resin structures "4", Figures 2A-B and 3), wherein a restorability of the second electrode to movement relative to the first electrode is dependent on a distribution density of the supports

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(Sections 136-149, wherein the spacer density is adjusted in different areas of the LCD to restore the second electrode and achieve proper spacing between the substrates, Figures 2A-2B and 3).

Regarding claim 2, Yamada '636 further discloses that the plurality of supports comprise a plurality of posts (Sections 136-139 and 310-311, wherein the supports "4" are posts, Figures 2A-B and 3); and the distribution density of the supports is a quantity of the posts per unit area (Sections 136-149).

Regarding claims 3-4, Yamada '636 further discloses that the supports have a distribution density in a range of 400 to 2500 posts per square millimeter (Section 333).

Regarding claim 5, Yamada '636 further discloses that the supports are grid supports (Section 310-311, wherein the supports are grid supports, Figures 2A-2B).

Regarding claim 6, Yamada '636 further discloses that the material of the supports comprises a photosensitive material (Section 310, wherein the spacers "3" are made of a thermoplastic resin, which is either photosensitive or non-photosensitive, Figures 2A-2B and 3).

Regarding claim 10, Yamada '636 further discloses that the material of the supports comprises a non-photosensitive material (Section 310, wherein the spacers "3" are made of a thermoplastic resin, which is either photosensitive or non-photosensitive, Figures 2A-2B and 3).

Regarding claim 8, Yamada '636 further discloses that the supports are made of a polyester material (Sections 311, wherein the supports "4" are made of polyester resin, Figures 2A-B and 3).

Regarding claim 9, Yamada '636 further discloses that the supports are made of an acrylic resin (Section 297, wherein the support member "7" is made of acrylic resin, Figures 1 and 2A-B).

Regarding claim 17, Yamada '636 discloses a method of fabricating a color-changeable pixel (Abstract and Section 100, wherein the LCD comprises pixels and a color display) comprising: providing a substrate (Sections 97, 302-307, wherein the substrate is "S2", Figures 2A-2B and 3), providing a first electrode over the substrate (Sections 97, 302-307, wherein the first electrode is "E2" on substrate "S2", Figures 2A-2B and 3), providing a second electrode over the first electrode, the second electrode substantially parallel to the first electrode (Sections 97, 302-307, wherein the second electrode is "E1" on substrate "S1" and is parallel to first electrode "E2", Figures 2A-2B and 3), wherein the second electrode is movable relative to the first electrode in response to voltage differences applied to the first electrode and the second electrode (Sections 5, 97, 136-149, 302-307, wherein the LCD deforms in response to an applied force, i.e. a voltage, as shown in Figures 2A-2B, Figure 3); and providing a plurality of supports between the first electrode and the second electrode (Sections 136-139 and 310, wherein the supports are spacers "3" and resin structures "4", Figures 2A-B and 3), wherein the second electrode has a preselected mechanical response in response to the voltage difference, the preselected mechanical response corresponding to a set of mechanical characteristics of the plurality of supports (Sections 136-149, wherein the spacer density is adjusted in different areas of the LCD to restore the second electrode and achieve proper spacing between the substrates, Figures 2A-2B and 3).

Regarding claim 18, Yamada '636 further discloses that the second electrode comprises a flexible layer (Sections 97, 302-307, wherein the second electrode "E1" is a deformable flexible electrode, Figures 2A-2B and 3).

Regarding claim 19, Yamada '636 further discloses that the preselected mechanical response comprises a distance moved by the second electrode upon application of the voltage differences to the color-changeable pixel (Sections 136-149, wherein the spacer density is adjusted in different areas of the LCD to restore the second electrode and achieve proper spacing between the substrates, Figures 2A-2B and 3).

Regarding claim 20, Yamada '636 further discloses that the set of mechanical characteristics comprises a distribution density (Sections 136-149, wherein the spacer density is adjusted in different areas of the LCD to restore the second electrode and achieve proper spacing between the substrates, Figures 2A-2B and 3).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yamada '636, as applied to independent claim 1 as shown above, in view of Yamada US 6,809,788, herein referred to as Yamada '788.

Regarding claim 7, Yamada '636 discloses spacers having a density distribution as shown above, but does not specifically disclose that the spacers are made of a photoresist. Yamada '788 teaches of a liquid crystal display with pixels (Abstract) wherein spacers are made of a photoresist (Column 57, lines 17-25, wherein the spacers are made from a photoresist process) for the purpose of dispersing the spacers over between the substrates to form an empty cell to be

filled with liquid crystal material (Column 57, lines 17-25). Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made for the spacers of Yamada '636 to be made of a photoresist since Yamada '788 teaches of a liquid crystal display with pixels wherein spacers are made of a photoresist for the purpose of dispersing the spacers between the substrates to form an empty cell to be filled with liquid crystal material.

Response to Arguments

Applicant's arguments filed June 22, 2006 have been fully considered but they are not persuasive. Specifically, applicant argues that Yamada '636 does not disclose the second electrode movable relative to the first electrode in response to a voltage difference applied to the first electrode and the second electrode. However, this limitation is not supported by the specification as shown above. Regardless, the examiner disagrees since Yamada '636 discloses that the second electrode is movable relative to the first electrode in response to a voltage difference applied to the first electrode and the second electrode (Sections 5, 97, 136-149, 302-307, wherein the LCD deforms in response to an applied force, i.e. a voltage, as shown in Figures 2A-2B, Figure 3).

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after


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the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

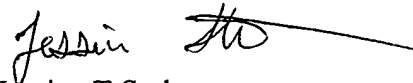
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jessica T. Stultz whose telephone number is (571) 272-2339. The examiner can normally be reached on M-F 8-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ricky Mack can be reached on 571-272-2333. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



JORDAN SCHWARTZ
PRIMARY EXAMINER



Jessica T Stultz
Examiner
Art Unit 2873